holograms configured to diffract light of a first wavelength and a second film having a second set of holograms configured to diffract light of a second wavelength.

16. The optical system defined in claim **1**, wherein the first hologram structures comprise a medium having a first set of holograms configured to diffract light of a first wavelength and a second set of holograms that is superimposed with the first set of holograms in the medium and that is configured to diffract light of a second wavelength.

17. The optical system defined in claim **1**, wherein the optical system comprises an optical combiner configured to combine the image light with real world light.

18. A display system comprising:

a display module configured to project image light; and

an optical system, wherein the optical system comprises:

a first layer of holograms configured to replicate the image light projected by the display module over a plurality of output angles; and

a second layer of holograms configured to focus the image light replicated by the first layer of holograms onto an eye box.

19. The display system defined in claim **18**, wherein the display module comprises a display selected from the group consisting of: a liquid crystal display, an organic light-emitting diode display, a laser-based display, a microelectromechanical system (MEMS) display, a digital micromirror device (DMD) display, a liquid crystal on silicon (LCoS) display, and a computer-generated holography (CGH) display.

20. The display system defined in claim **18**, further comprising:

a waveguide, wherein the waveguide is configured to receive the image light from the display module, expand the image light, and provide the expanded image light to the first layer of holograms; and

a lens configured to focus the expanded image light onto the optical system.

21. The display system defined in claim **18**, wherein the first layer of holograms comprises transmission holograms and the second layer of holograms comprises reflection holograms.

22. The display system defined in claim **18**, wherein the first layer of holograms comprises reflection holograms and the second layer of holograms comprises transmission holograms.

23. The display system defined in claim **18**, wherein the first and second layers of holograms each comprise reflection holograms.

24. An electronic device comprising:

a display module configured to project image light;

an image sensor;

an optical system configured to redirect a first portion of the image light to an eye box and a second portion of the image light to the image sensor, wherein the image sensor is configured to generate image data based on the second portion of the image light; and

control circuitry coupled to the display module and the image sensor, wherein the control circuitry is configured to identify a change in position of the optical system relative to the display module based on the image data, and wherein the control circuitry is configured to adjust the image light projected by the display module based on the identified change in position.

25. The electronic device defined in claim **24**, further comprising:

a first housing portion, wherein the optical system is mounted within the first housing portion; and

a second housing portion, wherein the display module and the image sensor are mounted in the second housing portion, wherein the electronic device comprises a head mounted device having a frame, and wherein the second housing portion comprises a temple of the frame.

26. The electronic device defined in claim **24**, wherein the optical system comprises first hologram structures configured to replicate the image light and second hologram structures configured to focus the replicated image light onto the eye box as the first portion of the image light, wherein the first and second hologram structures each comprise at least one hologram configured to diffract the image light towards the image sensor as the second portion of the image light, and wherein the second portion of the image light comprises infrared light and wherein the at least one hologram in the first and second hologram structures are configured to diffract the infrared light.

27. The electronic device defined in claim **24**, wherein the control circuitry is configured to adjust the image light projected by the display module based on the identified change in position to compensate for a distortion in the first portion of the image light produced by the change in position, and wherein the control circuitry is configured to adjust the image light by performing an operation selected from the group consisting of: adjusting an intensity of the image projected by the display module, adjusting a color of the image projected by the display module, and adjusting a geometry of an optical component in the display module.

28. An optical combiner configured to receive image light from a display module and configured to redirect the image light onto an eye box, the optical combiner comprising:

an optical diffuser; and

a set of holograms overlapping the optical diffuser, wherein the optical diffuser is configured to receive the image light at an angle external to a volume between the optical diffuser and the set of holograms, the optical diffuser is configured to replicate the image light by diffusing the image light over a plurality of angles, and the set of holograms is configured to focus the replicated image light onto the eye box.

29. An optical combiner configured to receive image light from a display module and configured to redirect the image light onto an eye box, the optical combiner comprising:

first transmission hologram structures configured to replicate the image light;

a partially reflective structure configured to reflect the replicated image light; and

second transmission hologram structures configured to focus the reflected replicated image light onto the eye box.

30. The optical combiner defined in claim **29**, wherein the partially reflective structure comprises a partially reflective structure selected from the group consisting of: a half-silvered mirror, a holographic optical element, and a notch filter.

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